be seen as blocking access. As the marginal cost (MC) of a new product is lower than the charged price there is a well-known waste. One option is to establish a **two-part pricing model** with a "subscription" price plus a usage price close to MC. The objective of this paper is to provide an economic analysis based on theories and concepts from microeconomics and industrial organization of two-part pricing in the market for patent protected medicines (PPM). **METHODS:** The situation will be analyzed from a game theoretical and an empirical perspective. The starting point is the Swedish Health Care system with focus on oncology. A two-part pricing contractual arrangement will also be discussed for some other EU countries. **RESULTS:** Demand side consists of a publicly funded local buyer who represents a large number of potential users. This often leads to a bargaining solution where price is below the one set by a standard monopoly. A two-part pricing - where the buyer pays a substantial fixed-fee to get access to the PPM and a per unit price equal to marginal cost – may increase efficiency. However, numerous issues need to be taken into account when considering introducing two-part pricing, for example uncertainty and risk, the operation on many markets, free-riders and reselling. **CONCLUSIONS:** Quantities are unlikely to be efficient with the current pricing model in the Swedish oncological market. A two-part pricing is likely to increase the efficiency in such markets but is also associated with some serious challenges.

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INTRODUCTION FOR THE LATEST DEVELOPMENT OF CHINESE PEDIATRIC MEDICINE

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OBJECTIVE: To introduce the development of Chinese pediatric medicine, and based on foreign experiences propose some measures that China should take immediately for improving the access to pediatric medicine and promote Chinese innovation for pediatric medicine. **METHODS:** Data were mainly obtained from the National Bureau of Statistics of China, the open Chinese government documents and some published papers. Apply descriptive statistics and comparison to summarize policies' lacks and propose some suggestions. **RESULTS:** In 2013, there are 220 million Children under 14 years old who account for 16.4% of total Chinese population. In the 2009 National Reimbursement Drug List, the number of pediatric medicines is about 60 and accounts for 1.52% in all 3500 drugs, 80% of which does not have usage information of "exclusive pediatric medicine", 90% of which does not have pediatric formulation. Adverse reaction rate of pediatric medicine is 12.9%, which is obviously higher than adult medicine. **CONCLUSIONS:** China should immediately take some incentive measures to encourage the innovation of pediatric medicines based on foreign experiences

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A SYSTEMATIC QUANTITATIVE APPROACH TO INCORPORATING THE PATIENT PERSPECTIVE INTO HEALTH TECHNOLOGY ASSESSMENT DECISION MAKING

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Incorporating the patient perspective on the value of medicines into health technology assessments (HTA) is becoming increasingly important as acknowledged by several prominent HTA agencies. NICE (UK) has employed several measures, including a Citizen's Council. Canada, particularly in the area of oncology, has a formalized process through which patient input on drug reviews and feedback on recommendations is obtained to ensure patients' experiences (both good and bad) of living with cancer and undergoing treatment are routinely considered. In Australia, there is a consumer representative on the Pharmaceutical Benefits Advisory Committee (PBAC) and patients have the opportunity to provide written input during the assessment process, although the process of how PBAC consider and incorporate this information into their decision is not transparent. There is a need for a more formalized framework for eliciting meaningful patient input and a more transparent process for how that input is incorporated into the decision making process. This research seeks to outline a novel methodological approach to elicit and quantify patient values in a systematic way for the purpose of treatment evaluation (Patient Value Mapping). The focus of this research is Chronic Lymphocytic Leukemia (CLL) and involves patient participation in multiple research stages. Stage 1 involves conducting exploratory qualitative interviews and semi-structured quantitative surveys to gauge how patients view treatments and what outcomes are most important to them. Stage 2 quantifies the insights from stage 1 using discrete choice based methods, including measuring the relative weightings of importance on each of the outcomes and the associated willingness to pay. Current and proposed treatments are entered into the resulting model and scored based on how well they align with patient values and expectations. The results of this analysis could be incorporated into the HTA evaluation process and used to guide decisions around the value of new medicines.

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CROWDSOURCING HEALTHCARE TECHNOLOGY INNOVATION: THE USE OF OPEN COMPETITIONS TO PURSUE NOVEL HEALTHCARE TECHNOLOGY SOLUTIONS

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OBJECTIVES: Traditionally, business-related projects are either executed by employees within an organization or outsourced to external vendors. Crowdsourcing, on the other hand, allows sponsors to leverage the Internet to draw upon the skills and experiences of the public in open forums to generate new ideas or deliverables. Crowdsourcing for healthcare technology innovation has become increasingly popular; however, the type of stakeholders involved and healthcare technologies sought are not well understood. The aim of this study is to characterize crowdsourcing competitions focused on healthcare technology innovation. **METHODS:** Information was gathered from the Health 2.0 Developer Challenge website, a leading online competition platform where complex healthcare challenges are crowdsourced by sponsoring agencies to teams of developers. Completed challenges listed on the platform from January 2007-October 2014 were identified. For each challenge, total prize money, stakeholder type, and challenge theme were examined. **RESULTS:** A total of 57 challenges were identified with $3.31 million awarded as total prize money (mean=$75,250; median=$40,000; max=$750,000). Government agencies sponsored the majority of challenges (46%), followed by non-profit (37%) and for-profit (25%) organizations. Four (7%) challenges were sponsored by pharmaceutical companies and accounted for 14% of total prize money (mean=$117,500; median=$150,000; max=$160,000). The five most common challenge themes identified were data management (25%), enhanced decision making (16%), communication barrier (14%), health education (14%), wellness/tracking (11%), and disease prevention/screening (11%). **CONCLUSIONS:** Although government agencies were the most common sponsors of crowdsourced healthcare technology challenges, pharmaceutical companies offered the highest mean monetary awards. Data management solutions (e.g. electronic health record applications) were the most frequently solicited theme among all challenges. Crowdsourcing shows promise as a source of innovative healthcare technology solutions; however, more research is needed to explore the viability of such solutions.

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ANALYSIS OF ETHICAL THEORIES AND PRINCIPLES EMBEDDED IN HOLISTIC MCDA: A PRIMER TO ETHICS-BASED APPRAISAL OF VALUE IN HEALTHCARE

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OBJECTIVES: MCDA provide innovative approaches to measure the value of interventions and support decision making. A broad range of criteria are used to integrate big data and reflect the various constraints under which healthcare decisions are made. The objective of this study was to analyze the ethical theories and principles embedded in the criteria of holistic MCDA. **METHODS:** EVIDEM was selected as a holistic framework aiming at defining value, or goodness, of healthcare interventions, in its widest sense (axiology), i.e., encompassing their effects on health of patients, populations and healthcare systems. Each criterion of the framework was analyzed regarding its ethical background theories, inherent norms, values, and associated principles, and ethical implications. A broad range of ethical theories and positions were considered including virtue ethics, deontology, consequentialism, utilitarianism, theory of justice, human rights, and principlism. **RESULTS:** Criteria related to healthcare intervention outcomes ("Effectiveness", "Safety", "Patient-reported outcomes", Type of benefit) are expressed in the Hippocratic Oath and rooted in deontology (imperative to help), principlism (autonomy, beneficence, non-maleficence), and also in consequentialism. "Disease severity", "Unmet needs" and "Priorities" are related to the theory of justice to prioritize those who are worst off, but also to deontology and virtue ethics. "Size of population" is rooted in utilitarianism pursuing the greatest good for the greatest number. Economic criteria as an inherent part of value appraisal ensure wise use of resources (virtue ethics [practical wisdom]) to maximize health under limited resources based on social responsibility (utilitarianism). "Affordability and Opportunity costs" and "System capacity and appropriate use" are related to consequentialism while "Political/historical/cultural" and "Stakeholders pressure/barriers" are rooted in virtue ethics and human rights. **CONCLUSION:** Holistic MCDA systematically incorporates a broad range of ethical perspectives, norms, values and principles, and as such is a normative approach for prioritizing healthcare interventions that optimize patients' and healthcare systems health.

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COMPARISON OF MACHINE LEARNING, STATISTICAL AND HYBRID METHODS TO IDENTIFY PREDICTORS OF POSITIVE TREATMENT OUTCOMES IN COMORBID CONDITIONS USING EMR DATA

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OBJECTIVES: Electronic Healthcare databases and use of machine learning algorithms has created opportunities for rapid learning. However, the indiscriminate application of machine learning algorithms to non-experimental healthcare databases may result in incorrect inferences about possible treatment benefits. This paper compares results from large healthcare databases produced by statistical, machine learning, and hybrid methods to emphasize the importance of controlling for known biases in healthcare databases and machine learning algorithms. **METHODS:** MS patient cases were selected from an EMR database that met the following criteria: Must be on an MS therapy for at least one year and diagnosed with at least one co morbidity prior to and during the treatment period. Co morbidity improvements are measured by changes in specific lab values measured prior to and during treatment. To facilitate method comparison, a binary variable was constructed to measure improvements in co morbidities experienced during MS therapy. Treatment groups were defined by specific MS therapies and compared to control groups treated with alternative therapies during the observation period. Propensity scores were used with all methods. Statistical and machine learning algorithms were compared to a hybrid algorithm, SIDES, originally designed for subpopulation analysis in RCT's while controlling for multiplicity bias (Lipkovich et al. 2011). **RESULTS:** Initial analyses identified differences in predictors of co mobidity improvements. The presentation will cover specific comparisons between different methods, highlight similarities and differences in findings and provide rationales for divergent results. **CONCLUSION:** Machine learning methods (such as SIDES) designed for use in RCTs can be adapted for use with large healthcare databases to accelerate learning and discovery while also including protections against known sources of bias in healthcare data (treatment selection) and machine learning methods (multiplicity) that can lead to incorrect inferences.